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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/692,291
Filing Date: October 23, 2003
Appellant(s): RAMO ET AL.

Kenneth Q. Lao
<u>For Appellant</u>

EXAMINER'S ANSWER

This is in response to the appeal brief filed 9/7/2006 appealing from the Office action mailed 11/22/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,704,000	SWAMINATHAN et al	12-1997
6,246,672	LUMELSKY	6-2001
6,449,590	GAO	9-2002

Lee et al. "A Very Low Bit Rate Speech Coder Based on a Recognition/Synthesis Paradigm" IEE Transactions on Speech and Audio Processing, (July 2001), pp. 482-491.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-5, 7-12, 15, 17, and 20 stand rejected under 35 U.S.C 103(a) as being unpatentable over Lee et al *("A Very Low Bit Rate Speech Coder Based on a Recognition/Synthesis Paradigm," 2001)* in view of Gao *(U.S. Patent: 6,449,590).* This rejection is set forth in a prior Office Action, mailed on 11/22/2005.

Claim 6 stands rejected under 35 U.S.C 103(a) as being unpatentable over Lee et al *("A Very Low Bit Rate Speech Coder Based on a Recognition/Synthesis Paradigm," 2001)* in view of Gao *(U.S. Patent: 6,449,590)* and further in view of

Swaminathan et al *(U.S. Patent: 5,704,000)*. This rejection is set forth in a prior Office Action, mailed on 11/22/2005.

Claims 13-14, 16, 18-19, and 21-24 stand rejected under 35 U.S.C 103(a) as being unpatentable over Lee et al *("A Very Low Bit Rate Speech Coder Based on a Recognition/Synthesis Paradigm," 2001)* in view of Gao *(U.S. Patent: 6,449,590)* and further in view of Lumelsky *(U.S. Patent: 6,246,672)*. This rejection is set forth in a prior Office Action, mailed on 11/22/2005.

(10) Response to Argument

The appellants traverse the prior art rejection of claims 1, 11, 17, 20, and 24 on the basis that end points (i.e., starting and ending points) of the linear approximation candidates of the presently claimed invention are not points on the original contour *(Appeal Brief, Section A4, Page 13)* and that the prior art combination of Lee et al *("A Very Low Bit Rate Speech Coder Based on a Recognition/Synthesis Paradigm," 2001)* (hereinafter, "Lee") and Gao *(U.S. Patent: 6,449,590)* (hereinafter, "Gao") is improper. Before addressing the appellants' specific points of the aforementioned arguments, the examiner will provide a summary of the Lee and Gao references as applied to the independent claims.

With respect to Claims 1 and 11, Lee discloses a method and system for creating a plurality of linear approximation candidate segments corresponding to a pitch contour

of an input speech signal *(Section, V.A., Pages 486-487 and Fig. 5)*, which corresponds to the creating step/module of the presently claimed invention. Lee further discloses the calculation of a contour approximation error, d, between an original pitch contour and a linear approximation candidate for selecting linear approximation segments that fall under a maximum acceptable error, d_{max} *(Section V.A., Pages 486-487)*, which corresponds to the measuring and selection steps/means of the presently claimed invention. Lee also discloses coding the selected segments *(Section V., Page 486)*, which corresponds to the final coding step of the presently claimed invention.

In Lee, however, the starting and ending points of the linear candidate segments are selected from the original pitch contour *(see Figs. 5 and 6)*. Thus, Lee does not disclose that starting and ending segments points of at least some linear candidates are different from corresponding pitch values of an initial contour as is required by the presently claimed invention *(for example, Claim 1, Lines 8-11)*.

Gao, however, overcomes the deficiencies of the teachings of Lee. Gao discloses a means for shifting the starting and ending points of linear approximation candidates *(such as the above noted candidates formed in Lee based on the original contour)* through time warping *(i.e., shifting the starting and ending points in time)*, thus achieving different starting and ending points in a linear approximation segment from those in the input pitch contour *(Col. 42, Line 17- Col. 43, Line 14)*. The benefit of performing such a modification to the teachings of Lee is to allow for a better linear approximation of a pitch contour by determining optimal start and ending times *(Final Office Action, Page 4; and Gao, Col. 42, Line 9- Col. 43, Line 14)*.

With respect to Claims 17, 20, and 24, Lee further discloses a decoder *(Fig. 1)*

capable of decoding the speech data from the above described encoding process. In

addition, with respect to Claim 24, Lumelsky *(U.S. Patent: 6,246,672)* discloses a

communication network having a plurality of base and mobile stations, which is deficient

in the teachings of Lee and Gao.

Response to the appellants' arguments:

Returning now to the appellants' specific arguments, the appellants first argue

that the difference between the claimed invention and the teachings of Lee and Gao is

that some linear contour segment end points are not points on the original contour

(Appeal Brief, Page 13). In response, the examiner notes that the features upon which

applicant relies (i.e., some linear contour segment end points that are not points on the

original contour) are not recited in the rejected claim(s). Although the claims are

interpreted in light of the specification, limitations from the specification are not read into

the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Instead, the claimed invention requires that ""the start segment points of at least some

candidates are different from the start-point pitch values of the corresponding sub-

segments and the end segment points of at least some candidates are different from the

end-point pitch values of the corresponding sub-segments." This limitation would

include the instance where the end points of the candidate segments may lie on the

original pitch contour as long as they have a different value than the corresponding

segments on the original contour *(for example, shifted in time)*. The examiner notes

that this claimed limitation is taught by the above noted combination of Lee and Gao,
wherein Lee teaches the generation of linear approximation segments and Gao teaches
shifting the starting and ending points of those segments through time warping in order
to closer approximate a pitch contour, thus creating shifted starting and ending points
with a different value. The benefit of such a modification of the teachings of Lee is to
allow for a better linear approximation of a pitch contour by determining optimal start
and ending times *(Final Office Action, Page 4; and Gao, Col. 42, Line 9- Col. 43, Line
14)*. Thus, since the appellants' features relied upon are not recited in the claimed
invention and the combination of Lee and Gao discloses the presently claimed
invention, the appellants' arguments are not convincing.

In traversing the motivation and incentive of the combination of Lee and Gao, the
appellant first argues that the combination of Lee and Gao would result in an overly
complex encoder, and thus, one of ordinary skill in the art would not be motivated to
make such a combination *(Appeal Brief, Pages 13-14)*. In presenting such an
argument, the appellants contend that the time warping performed on linear speech
segments requires weighted speech processing steps *(Appeal Brief, Page 14)*. In
response the examiner notes that, as was indicated in previous office actions *(Final
Office Action, Pages 3-4 and Advisory Action from 4/5/2006)*, the teachings of Gao are
only relied upon for the teaching of a process of applying time warping to a linear
approximation speech segment. More specifically, as was explained above, Lee
teaches a means for generating linear pitch approximation candidate segments, while

Gao discloses that time warping can be applied to these segments for generating a more optimal approximation. The weighted speech signal and the associated processing steps taught by Gao were not relied upon in the prior art rejection.

Second, contrary to the appellants' arguments that the teachings of Gao require weighted speech signal processing, the examiner points out that Gao specifically notes that such speech weighting is not required ("the original speech signal might have alternatively been used," Col. 42, Lines 40-42).

Finally, in arguendo, even if a weighted speech signal was required *(which it is not, as was pointed out above)*, and thus, a more complex coder was required, as long as there is some clear motivation (i.e., benefit) provided by the references themselves for combining the prior art of record (See MPEP 706.02(j)), added complexity would not be an issue. In the present case, Gao specifically states that modifying a linear approximation segment provides the benefit of allowing for a better linear approximation of a pitch contour by determining optimal start and ending times *(Final Office Action, Page 4; and Gao, Col. 42, Line 9- Col. 43, Line 14)*.

Thus, for at least the above three reasons, the appellants' arguments are not convincing.

In traversing the motivation of the combination of Lee and Gao, the appellant next argues that it is "uncertain" whether Lee and Gao may be compatible because Gao relies on a weighted speech signal *(Appeal, Brief, Page 14)*. In response, the examiner pointes out that, as was noted above, only the time warping process in Gao is relied

upon in the prior art rejection and Gao further discloses that a weighted speech signal is

not required in performing linear approximation. Furthermore, the examiner notes that

such a combination would be compatible because Lee discloses the generation of linear

approximation segments, while Gao recites how these segments can be modified to

achieve a more optimal approximation. Thus, these arguments are not convincing.

In traversing the motivation of the combination of Lee and Gao, the appellant

next argues that Lee alone can provide what the teaching of Gao and Lee can provide

because Lee can use a smaller acceptable error to improve coding accuracy. In

response, the examiner points out that the fact that Lee notes there is still some type of

error left even with an accurate approximation *(Section V.A., Pages 486-487)* is

indicative that there is room for improvement in his coding process. Gao provides this

improvement. By time warping the candidate segments that are generated by Lee by

selecting maximum error points on a pitch contour, it allows a coding system more

flexibility in determining a linear approximation, which may better match an original pitch

contour. More specifically, modifying the end points of the linear approximation

candidate segments taught by Lee through time warping would lead to a better

approximation earlier in the process taught by Lee, which would inherently result in a

lower number of passes through the approximation process and a lower bit number

because the approximation would be more likely to fall under the maximum error level

through a more accurate initial approximation *("optimal start and ending times for a pitch*

contour segment," Final Office Action, Page 4; and Gao, Col. 42, Line 9- Col. 43, Line

14). Thus, since the teachings of Gao allow for further optimizing a linear approximation candidate segment, the examiner notes that these arguments are not convincing.

In traversing the motivation of the combination of Lee and Gao, the appellant alleges that the time duration between end points in Gao *may* be preselected and thus Lee "*may* not be able to use its principle of operation" if combined with Gao. In response the examiner notes that, as pointed out by the appellant, such a pre-selection is not required by Gao *("may be preselected," Appeal Brief, Page 15)* and no specific arguments as to why Lee would not be able to use its principal mode of operation have been provided *("may not be able to use its original principle of operation," Appeal Brief, Page 15)*. Thus, the examiner notes that such arguments amount to a general allegation and are unconvincing.

In traversing the motivation of the combination of Lee and Gao, the appellant argues that there is no need to apply time warping to the presently claimed invention (Appeal Brief, Pages 15-16). In response, the examiner notes that the benefit of combining a secondary reference with a currently claimed invention is not one of the requirements of a proper 35 U.S.C. 103 (a) rejection *(see MPEP 706.02(j))*. Thus, such arguments are immaterial in traversing the obviousness of the combination of Lee and Gao.

In response to the appellants' argument that Gao does not teach or suggest different end points of a linear segment *(Appeal Brief, Page 16)*, the examiner notes that these arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out *how* the language of the claims patentably distinguishes them from the references. The examiner also points out that Gao specifically teaches that an original segment endpoint is shifted in time (or warped in order to achieve an optimal approximation, Col. 42, Line 56- Col. 43, Line 14). Thus, the linear segment end points in Gao would not be the same as the in the original pitch contour because they are time warped.

The additional claims are argued as being distinguishable over Lee in view of Gao for the same reasons as claims 1 and 11 *(Appeal Brief, Pages 16-17)*. In response to such arguments, the examiner directs the appellant to the above comments regarding claims 1 and 11.
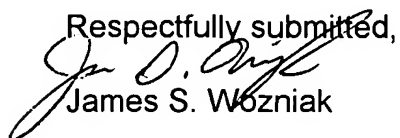
(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.
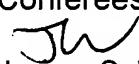
For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

James S. Wozniak

Conferees:

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